Ocean gales and storms, May, 1930—Continued

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Highest force of wind and direction	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH PACIFIC OCEAN—continued			° ′	° ′				*Inches*					
Pres. McKinley, Am. S. S.	Victoria	Yokohama	52 49 N	160 35 W	May 4	8 p.m., 7	May 8		W	SSE, 2	NW	NW, 8	W-SSE-WNW-N.
Waitemata, Br. S. S.	Suva	Vancouver	44 26 N	131 48 W	May 6	4 p.m., 6	May 7	30.16	NW	NW, 9	NW	NW, 9	WNW-NNW-WNW.
Mojave, Am. S. S.	San Pedro	Yokohama	33 40 N	144 06 E	May 6	Mdt., 6	May 6	29.75	SW	SSW, 7	SSW	SW, 8	SW-SSW-SW.
Admiral Watson, Am. S. S.	Seattle	Kodiak	59 12 N	147 40 W	May 7	—, 8		29.80	E	E, 5	—	E, 8	E-SE-S-SW.
Los Alamos, Am. M. S.	San Francisco	Portland, Oreg	38 31 N	123 45 W	May 7	4 a.m., 8	May 9	29.93	NW	NNW, 7	NNW	—, 8	WNW-NW-NNW.
Havre Maru, Jap. S. S.	Kobe	San Francisco	49 30 N	172 20 E	May 8	10 a.m., 9	May 9	29.23	ESE	E, 9	SW	E, 9	
Koyo Maru, Jap. S. S.	Yokohama	Grays Harbor	44 28 N	160 15 E	May 10	8 p.m., 11	May 13	29.37	ESE	SW, 6	NE	ESE, 8	ESE-SSW-NE.
Tecumseh, Br. S. S.	do	San Pedro	44 19 N	165 48 E	May 18	6 p.m., 18	May 19	29.40	SSE	SSW, 8	W	WSW, 8	S-SSW-SW.
Shikisan Maru, Jap. M. S.	Portland, Oreg	Yokohama	49 41 N	173 19 E	May 19	4 a.m., 20	May 20	29.36	SW	WSW, 8	SW	W, 9	SW-W-S-SW.
Tecumseh, Br. S. S.	Yokohama	San Francisco	46 15 N	178 52 E	May 20	Mdt., 20	May 20	30.05	SW	SW, 8	WSW	SW, 8	Steady.
Golden Dragon, Am. S. S.	San Francisco	Shanghai	42 45 N	147 48 E	May 20	do	May 20	29.12	S	S, 8	WSW	S, 9	SSE-S.
Makiki, Am. S. S.	Hilo	San Francisco	37 09 N	124 26 W	May 21	Mdt., 21	May 22	30.15	NW	NW, 8	NW	—, 8	Steady.
Mojave, Am. S. S.	Kobe	San Pedro	46 48 N	156 35 W	May 22	4 a.m., 24	May 24	29.52	S	SSE, 7	SE	SSE, 10	Do.
Tecumseh, Br. S. S.	Yokohama	San Francisco	46 16 N	155 43 W	May 23	6 a.m., 24	May 24	29.50	SSE	S, 7	S	SSE, 9	Do.
Pres. Grant, Am. S. S.	Seattle	Yokohama	49 10 N	169 58 E	May 24	4 p.m., 25	May 26		SE	SSW, 9	W	—, 10	SE-S-W.
Wilhelmina, Am. S. S.	do	Honolulu	37 50 N	141 25 W	May 25	6 a.m., 26	May 27	29.70	SE	SSW, 6	NW	SSW, 8	SE-S-SW-NW.
Golden Star, Am. S. S.	Shanghai	San Francisco	49 17 N	135 57 W	May 26	9 p.m., 26	May 26	29.67	SSW	SSW, 7	SW	SSW, 10	Steady.
San Pedro Maru, Jap. M. S.	Tokuyawa	do	43 00 N	176 25 W	May 27	2 a.m., 28	May 29	29.20	E	W, 2	W	WNW, 8	NE-SW-WNW.
Grays Harbor, Am. S. S.	Tacoma	Yokohama	51 48 N	168 18 W	May 28	1 a.m., 29	May 29	28.90	E	NE, 4	NW	E, 8	E-NE.
Akagisan Maru, Jap. M. S.	Yokohama	San Francisco	47 39 N	175 32 W	May 30	6 p.m., 30	June 1	29.03	SW	SW, 7	WSW	WSW, 8	SW-WSW.

NORTH PACIFIC OCEAN

By F. G. TINGLEY

The average pressure during May throughout the region embracing the Aleutian Islands and Gulf of Alaska showed only a slight change from the preceding months of March and April. With the advance of the season pressure in the Aleutian area normally rises, the change from December to June, using the records at Dutch Harbor as a basis of comparison, amounting to 0.40 inch, the pressure values for the months named being, respectively, 29.58 and 29.98 inches. During the month under consideration pressure in this region actually fell slightly instead of rising. The average values at Dutch Harbor, St. Paul, and Kodiak were, respectively, 29.60, 29.61, and 29.77 inches as compared with corresponding April values of 29.81, 29.76, and 29.72 inches. At the same time pressures at Midway Island, Honolulu, and Juneau were slightly higher than in April, contributing further to the steepness of the barometric gradient throughout this extensive region. The pressure values of these and other island and coast stations are given in the accompanying table.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level, at indicated hours, North Pacific Ocean and adjacent waters, May, 1930*

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Point Barrow [1] [3]	29.98		30.44	11th [6]	29.70	5th.
Dutch Harbor [2] [3]	29.60	−0.30	30.16	21st	29.02	29th.
St. Paul [3]	29.61	−0.25	30.08	21st	29.30	14th. [6]
Kodiak [3]	29.77	−0.10	30.30	11th	29.12	4th.
Midway Island [3]	30.19	+0.10	30.30	17th [6]	30.06	14th. [6]
Honolulu [4]	30.09	+0.04	30.16	3d	30.02	22d. [6]
Juneau [4]	29.96	−0.03	30.30	25th	29.58	16th. [6]
Tatoosh Island [4] [5]	30.02	−0.02	30.45	22d	29.57	20th.
San Francisco [4] [5]	29.99	+0.01	30.27	21st	29.64	4th.
San Diego [4] [5]	29.96	+0.03	30.09	9th	29.77	4th.

[1] For 26 days.
[2] For 30 days.
[3] P. m. observations only.
[4] A. m. and p. m. observations.
[5] Corrected to 24-hour mean.
[6] And on other date or dates.

The North Pacific HIGH was fairly well developed throughout the month, and moderately high pressure extended from the coast of North America westward to midocean.

Notwithstanding the more pronounced pressure distribution just described the weather of the North Pacific during May was relatively quiet and very favorable to shipping. Few gales were experienced, chiefly of forces 8 and 9. On only three occasions during the month were winds of force 10 reported. These occurrences were on the 23d, 25th, and 26th, in widely separated regions. The amount of fog appears to have been less than usual for the season. Two tropical storms have been reported, one, a typhoon in the Philippines, described in the subjoined article by the Rev. José Coronas, S. J., chief of the meteorological division of the Philippine Weather Bureau.

The accentuation of the Aleutian LOW at this late date gave rise to considerable rain and some snow over the central portion of the northern steamship routes.

The month opened with the North Pacific HIGH well developed, having a central isobar of 30.50 inches embracing the region from 35° to 40° N. latitude, 145° to 155° W. longitude. There was a minor depression over Bering Sea. This general arrangement of pressure continued for several days, the HIGH being reinforced from the westward and the depression to the northward increasing in intensity and moving eastward over Alaska. With the passage of the latter an anticyclone advanced southeastward over the Continent and from the 7th to the 9th high pressure bridged the region between this anticyclone and that over the Pacific. During the ensuing week high pressure areas continued to advance southward over the continent and the connection between the continental and oceanic HIGHS was for the most part maintained. The oceanic HIGH was steadily reinforced on its western side.

From the 15th to the 20th a belt of low pressure was established between the Aleutian LOW and the American mainland along which depressions of varying magnitude were irregularly distributed. About the 23d a break

occurred in the oceanic belt of high pressure, occasioned by a depression of some magnitude advancing eastward and southeastward from the western part of the ocean. It was this depression that gave rise to the principal gales of the month along the northern steamer lanes. By the 27th this area of low pressure had reached the Gulf of Alaska and the region southeastward therefrom where it lost energy and broke up into minor depressions.

On the 29th a fresh disturbance appeared at Dutch Harbor, occasioning the lowest pressure of the month, 29.02 inches. On the same date the American steamship *Grays Harbor*, in latitude 50° 48′ N., longitude 168° 15′ W., reported a pressure of 28.90 inches, the lowest reading for the month thus far reported by any observing vessel.

The month closed with a pressure distribution quite similar to that at the beginning; that is, with the California-Pacific HIGH fairly well established in its normal position and a depression over the Aleutians.

The weather at Honolulu was warm and dry. East winds predominated, the average hourly velocity being 10.1 miles per hour, or 1.1 miles above the normal. The maximum velocity was 31 miles per hour, from the east, occurring on the 1st.

TYPHOONS AND DEPRESSIONS

By Rev. José CORONAS, S. J.

[Weather Bureau, Manila, P. I.]

ONE TYPHOON OVER NORTHERN LUZON IN MAY, 1930

There was only one typhoon over the Philippines during this month of May. It followed a track quite proper to the month, traversing the Archipelago twice, once moving westward, and then, in its movement to the east after it recurved to north, northeast and east, passed to the west and northwest of northern Luzon.

The observations received up to June 6 do not show that this typhoon was very deep in any part of its track, yet it caused considerable damage by the long duration of squalls and rains in the western provinces of northern Luzon.

The typhoon appeared for the first time in our weather map of 6 a. m., May 19, near 144° longitude E. and 5° latitude N. It moved northwestward on the 19th and 20th, and passed over or very near Yap in the afternoon of the 20th. It moved much inclined to the north from the evening of the 20th until the night of the 21st to 22d when it took a westerly direction. Its center crossed northern Luzon not far north of Baguio in the evening and night of the 24th. Once in the China Sea it was noticed soon that the typhoon had a tendency to recurve northeastward. It moved northward on the 25th and advanced very slowly on the 26th and 27th, while inclining more and more to the northeast and east. Its center was then less than 100 miles to the northwest of Luzon. On the 28th the typhoon moved decidedly eastward across the Balintang Channel near to the south of Basco, but on the 29th it took again a northerly direction. Finally on the 31st it inclined again northwestward, and filled up gradually over the western part of the Eastern Sea on June 1 to 2.

The approximate position of the center at 6 a. m. May 19 to June 1, was as follows:

May 19, 6 a. m., 144° 00′ longitude E, 5° 20′ latitude N.
May 20, 6 a. m., 139° 45′ longitude E, 8° 10′ latitude N.
May 21, 6 a. m., 136° 45′ longitude E, 12° 30′ latitude N.
May 22, 6 a. m., 134° longitude E, 16° 20′ latitude N.
May 23, 6 a. m., 129° 20′ longitude E, 17° 15′ latitude N.
May 24, 6 a. m., 125° longitude E, 17° 30′ latitude N.
May 25, 6 a. m., 118° 55′ longitude E, 17° latitude N.
May 26, 6 a. m., 119° 30′ longitude E, 19° 10′ latitude N.
May 27, 6 a. m., 119° 50′ longitude E, 19° 35′ latitude N.
May 28, 6 a. m., 120° 15′ longitude E, 19° 50′ latitude N.
May 29, 6 a. m., 124° longitude E, 20° 25′ latitude N.
May 30, 6 a. m., 125° 05′ longitude E, 23° 50′ latitude N.
May 31, 6 a. m., 125° 05′ longitude E, 26° 05′ latitude N.
June 1, 6 a. m., 124° 30′ longitude E, 27° 15′ latitude N.

The American steamers *President McKinley*, *Tacoma*, and *President Taft* were well under the influence of this typhoon over the China Sea to the northwest, west and south of the center. A gale from W. (8) and WSW. (9), respectively, were reported by the steamers *President McKinley* and *Tacoma* on the 25th.

Besides this typhoon there was another depression or typhoon, of not much importance for the Philippines, over the China Sea. It moved northwestward from the Paracels on the 17th, crossed Hainan on the 18th, and entered the Continent on the 19th north of Gulf of Tongking.

FALL OF PUMICE

Mr. P. E. Troup, second officer and observer on the steamship *American Dragon*, Capt. C. H. Bruun, San Francisco toward Shanghai, reports a fall of pumice, as follows:

May 12, 2.30 a. m.: Approximate position, latitude 48° 53′ N., longitude 172° 16′ W. Noticed a strong peculiar smell of gas; sky overcast with a fresh west by north breeze. At daylight ship was covered with a fine ash. The peculiar smell lasted till about noon.

The following note in regard to this occurrence is taken from the Hydrographic Bulletin of June 18, 1930:

H. B. Metcalfe, an officer of the British steamer *Empress of Russia*, Capt. A. J. Holland, reports that May 13, 1930, in latitude 51° 06′ N., longitude 178° 33′ W., extensive fields of floating pumice were encountered, which appeared to be about 2 inches deep in the larger fields, and ranged from the size of a pinhead to that of a large bean. Some of the patches were from 2 to 3 acres in extent, while others were much smaller, and reached north and south as far as could be seen. The vessel passed through continuous patches for 30 miles.